KUBER-1000 Series
User Manual

Version 1.3

2021/08/31

Table of Contents

1 REVISION 3
2 PREFACE 4
2.1 Copyright 4
2.2 Acknowledgement 4
2.3 Warranty 4
2.4 Declaration of conformity 5
2.5 Technical support 5
3 INTRODUCTION 6
3.1 Product overview 6
3.2 Safety Precautions 7
3.3 Hardware Specification 8
3.4 Appearance 9
3.4.1 KUBER-1000 9
3.5 Interface 9
3.5.1 USB 3.0 9
3.5.2 HDMI 9
3.5.3 Ethernet 10
3.5.4 LED indicator 10
3.5.5 Power terminal 11
3.5.6 Micro-SD card slot 11
3.5.7 Antenna 12
3.6 Dimensions 12
3.6.1 One layer 12
4 SYSTEM INSTALLATION 14
4.1 Wall mount 14
4.2 DIN-Rail mount 15
5 INITIAL SETUP 18
5.1 Chassis Grounding 18
5.2 Connecting Power 18
5.3 External Antenna installation 18
APPENDIX 20
Contact us 20

1 REVISION

Revision	Date	Description
R1.0	20210125	- V1.0 first edition
R1.1	20210514	- Update Hardware spec table - Update Wall mount & DIN Rail information
R1.2	20210621	- Update LAN LED indicator table
R1.3	20210831	- Update LAN LED indicator table

2 PREFACE

2.1 Copyright

This document is released and copyrighted are reserved by MiTwell, Inc. No parts of this document may be copied, reproduced by mechanical, electronics or other means in any form, for any purpose, without prior authorization by MiTwell, Inc.

The information contained within this user manual, including but not limited to any other product specification, MiTwell, Inc reserves its right to modify them at any time without notice.

2.2 Acknowledgement

All product names, logos, brands, trademarks and registered trademarks in this user's manual or the MiTwell website are the property of their respective owners.

2.3 Warranty

MiTwell warrants that each product failing to function properly under normal use for 12 months from the invoice date. Due to an effect in materials, workmanship or due to nonconformance upon specifications, will be repaired or exchanged at MiTwell's option and expense.

For RMA and DOA goods, customers should follow the standard procedure and send back the goods. For detail please see the warranty policy by below link: http://rma.portwell.com.tw:10007/mitwellrma/Default.aspx

2.4 Declaration of conformity

CE (European Union)

This equipment is in conformity with the requirement of the following EU legislations and harmonized standards. Product also complies with the Council directions. (EN 55032, EN 55024, EN 61000-6-1)

FCC (Federal Communications Commission Radio Frequency Interface Statement)

This device complies with part 15 FCC rules. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. (CFR Title 47 Part15 Subpart B: 2018 Class A)
Operation is subject to the following two conditions: one is the device may not cause harmful interference, and second is that the device must accept any interference received including interference that may cause undesired operation.

2.5 Technical support

MiTwell are committed to provide the best support and service for our customers, which can help customer implement and use MiTwell's products easily.

We suggest that you download the latest documentation, utilities and drivers which have been made available to assist you on MiTwell website. If you still require assistance after visiting our website, you can contact your local sales and technical support team for further assistance.

For more information on this and other products, please visit our websites at: http://www.mitwell.com.tw

3 INTRODUCTION

3.1 Product overview

KUBER-1000 series is a new generation of palm-sized, flexible and ready-to-use industrial PC designed for a variety of applications in the industrial 4.0 world. The KUBER-1000 is designed in palm size (99 (L) x 34 (W) x 92 (D) mm) and equipped in a fan-less case, featuring the latest Broadcom BCM2711 processor with 1GB (LPDDR4 3200) memory. The adopting processor benefits more than 50% performance by supporting out-of-order execution compared to the previous generation, Cortex-A53. The graphic (VideoCoreIV) boosts from clock speeds 400 MHz to 500MHz, supporting display output up to 4K at 30Hz. KUBER-1000 also has a well-thermal solution, operating a Thermal Design Power (TDP) below 10W and supports 12-30 VDC +/- 20% power consumption for demanding areas.

The sufficient I/Os could well perform data collection and transition, edge computing or communication tasks in applications like industrial automation, intralogistics or smart retailers. KUBER-1000 is proved to be your best choice.

3.2 Safety Precautions

Warning note

This symbol indicates hazards that could lead to personal injury. There are three signal words indicating the severity of a potential injury. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

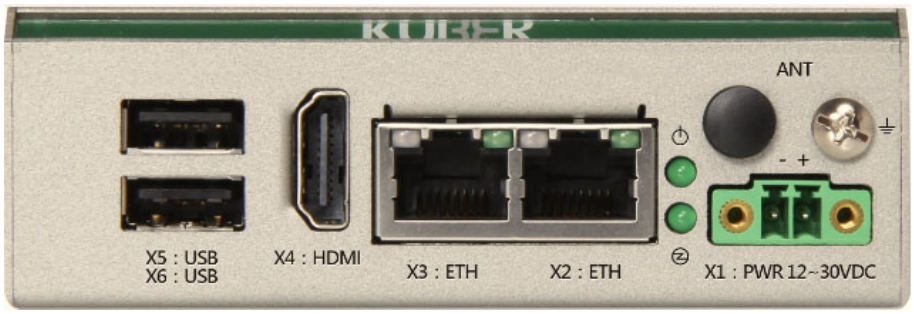
	DANGER Indicates a hazard with a high risk level. If this hazardous situation is not avoided, it will result in death or serious injury. **WARNING** Indicates a hazard with a medium risk level. If this hazardous situation is not avoided, it could result in death or serious injury. **CAUTION** Indicates a hazard with a low risk level. If this hazardous situation is not avoided, it could result in minor or moderate injury.
	This symbol together with the **NOTE** signal word alerts the reader to a situation which may cause damage or malfunction to the device, hardware/software, or surrounding property.
	Here you will find additional information or detailed sources of information.

3.3 Hardware Specification

Model Name	KUBER-1000
CPU	Quad core Cortex-A72 (ARM v8) 64-bit SoC, 1.5GHz
Mass Storage	Micro-SD slot
Memory	On Board LPDDR4 1GB (up to 8GB), 3200MT/s Dual memory channel, 64bit, non-ECC
Power Input	Rated input voltage: 12-30 VDC Range of input voltage: 9-36 VDC
Indicator LED	Power (Green)/ Run (Green)
Operating Systems	Yocto, Ubuntu IoT
	Basic I/O Interface
Power Connection	1 x 2-pin screw-type terminal block
Ethernet	2x 10/100/1000 bit Ethernet
USB	2 x USB 2.0
Display	1x HDMI 2.0 with 3840x2160 @ 30 Hz resolution
	Environment
Operating Temperature	**-20°C ~45°C (Under system I/O, performance full loading, no air flow)**
Storage Temperature	-40 °C ~ 85 °C
Vibration	1G, by DIN-Rail (EN 60068-2-6) ~2G Random, 1hr/axis, by Wall mount (MIL-STD-810G 514.7C-V Category-4)
Shock	15G with 11ms impulse length by DIN Rail (EN 60068-2-27) 50G with 11ms impulse length, half sine by Wall mount (EN 60082-2-27)
Certification	CE (EN55024, EN55032, EN 61000-6-1(2007) FCC (CFR Title 47 Part15 Subpart B: 2018 Class A)
	Mechanical
Degree of Protection	IP30
Dimension (mm)	99mm (L) x 92mm (W) x 34 mm (D)
Net Weight (Kg)	0.3 Kg
Mounting	Support DIN rail (Type Ω) and Wall mounting
Cooling	Fanless

3.4 Appearance

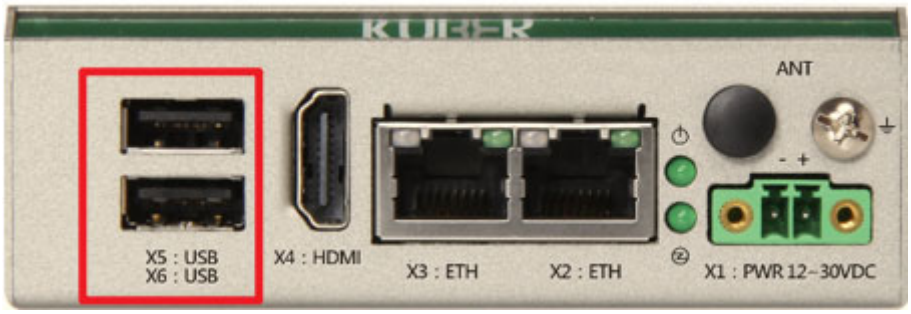
3.4.1 KUBER-1000



Interface with 2 x USB2.0, 1 x HDMI,
2 x GbE LAN, Power connectors

3.5 Interface

3.5.1 USB 3.0



KUBER-1000 provides two USB Type-A 2.0 to connect external device such as mouse, keyboard or external storage device.

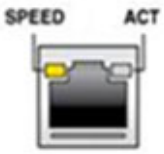
3.5.2 HDMI

The port support HDMI 2.0 with 3840×2160 @ 30 Hz resolution

3.5.3 Ethernet

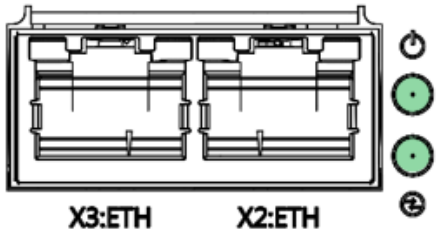
KUBER-1000 series are equipped with 2x GigaLAN port, which fully compliant with 10/100/1000 Base-T Ethernet network. Two RJ45 connectors allow the computer to communicate on a 10/100/1000 Base-T Gigabit LAN Ethernet network.

	Link LED		Activity LED	
	Status	**Description**	**Status**	**Description**
X3: ETH	Orange	Link	Green(blink)	activity

	Speed LED		Activity LED	
	Status	**Description**	**Status**	**Description**
 **X2: ETH**	Off	10 Mbps	Green(blink)	activity
	Green	100Mbps		
	Orange	1 Gbps		

3.5.4 LED indicator

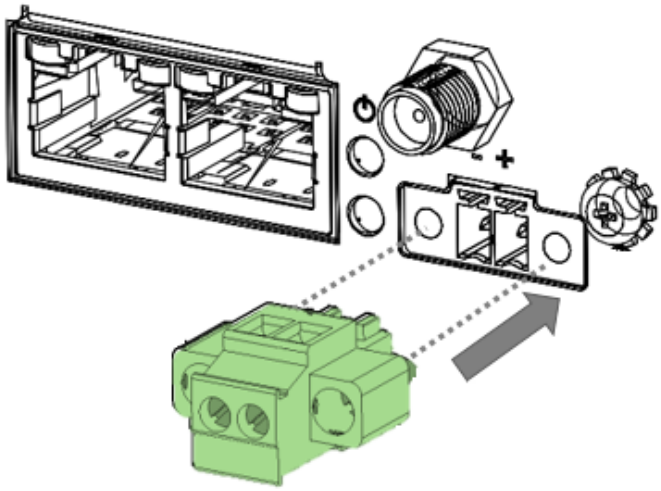
Two LEDs are provided on the KUBER-1000. These LEDs provide operating information.



Function*	Status	Description
Power	Power ON	Solid Green
	Power Off	Off
Run Status (GPIO)	Run	Flash Green
	off	Off
*: Need to auto detection functionality while power applied		

3.5.5 Power terminal

⚠	A 2-position, screw-type terminal block (MC 1,5/ 2-STF-3,5) is provided for connecting power to the KUBER-1000.



Connect a power source to the included power connector. This connector supports wire sizes from 0.2 to 1.5 mm² (AWG min.24). Use copper conductors only, wiring cable maximum temperature should support at least 105℃ Tighten the wire to a torque value 5 kgf-cm.Torque the wire-retaining screws in the connector to 0.22Nm…0.25 Nm.

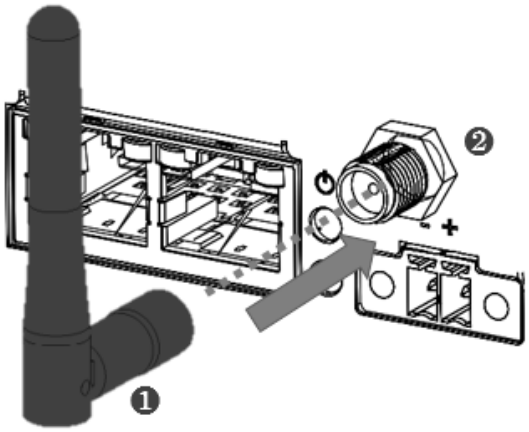
Pin No.	Description
-	0 V DC
+	12-30VDC

3.5.6 Micro-SD card slot

Release the screw and disassemble the chassis of KUBER-1000, you can see the micro-SD card slot on the main board. you can plug the size of micro-SD which meet your requirement for the storage.

3.5.7 Antenna

KUBER-1000 can adept Wi-Fi antenna have better wireless network signal

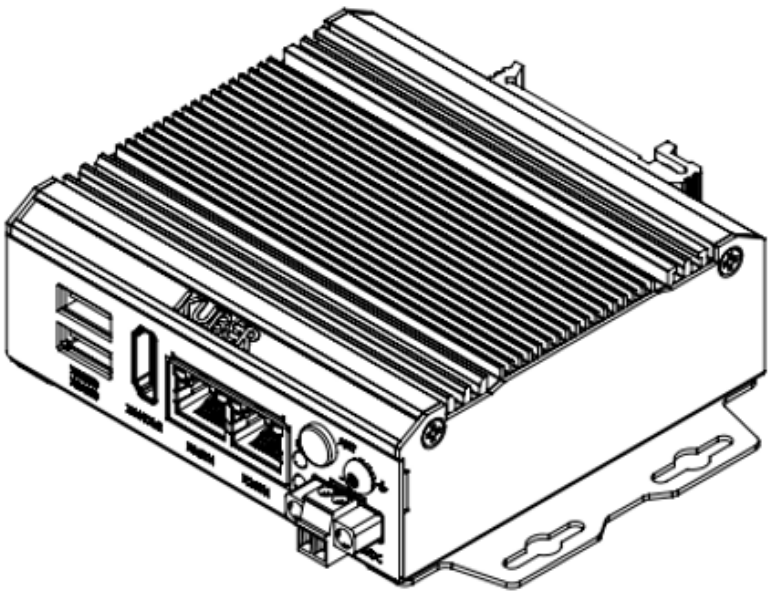


3.6 Dimensions

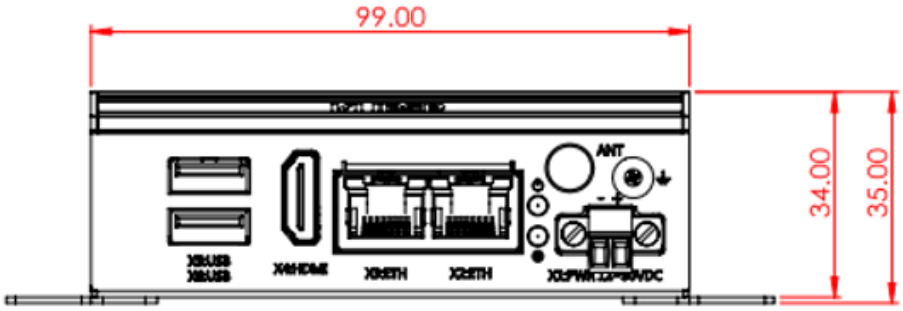
All dimensions shown in mm (millimeters)

3.6.1 One layer

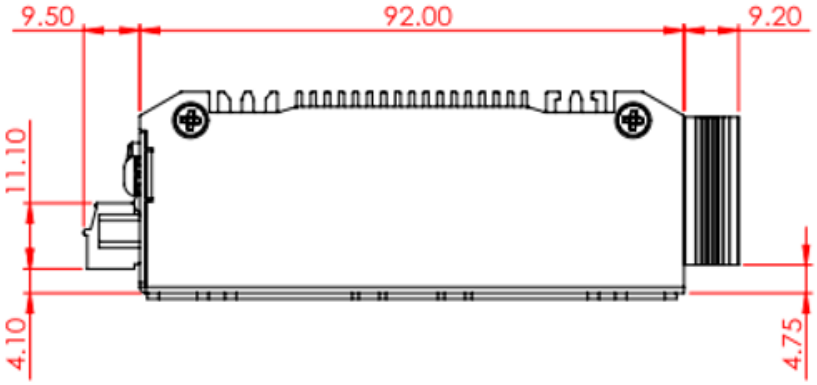
Dimension: 99mm (L) x 92mm (W) x 34 mm (D)



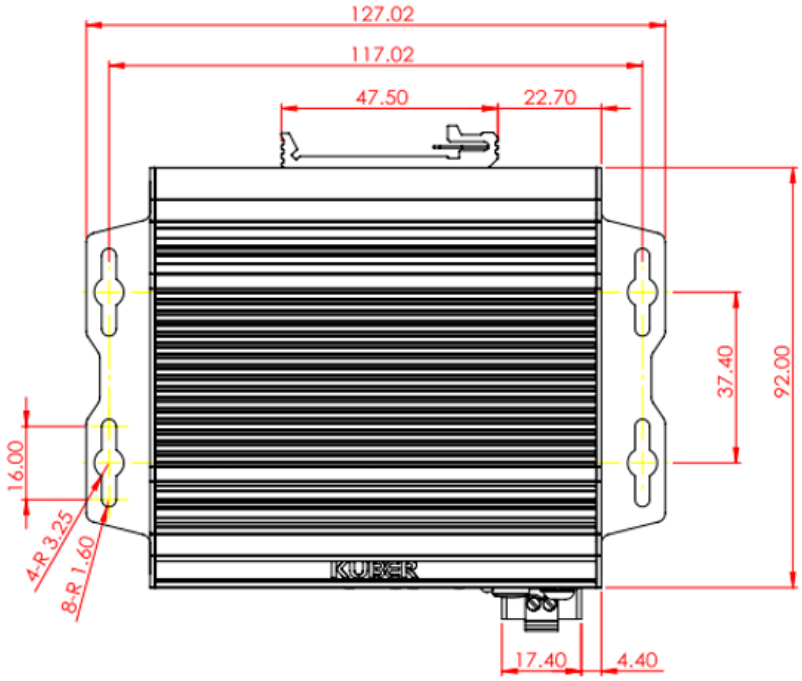
Front view



Side view



Top view



4 SYSTEM INSTALLATION

KUBER-1000 support two types of mounting: wall mount bracket and DIN-rail mounting bracket. You can purchase mounting kit from MiTwell as an optional accessory. This chapter provide step-by-step mounting guide for the mounting options.

⚠	Make sure to fasten the screw **(M3 x 4L)** with proper torque **(5kgf-cm)** by torque wrench on KUBER-1000. Improper torque may cause the damage of screw thread on the aluminum chassis.

4.1 Wall mount

Installation

Fasten the Wall mount bracket by screws **(M3 x 4L)** on the KUBER-1000.

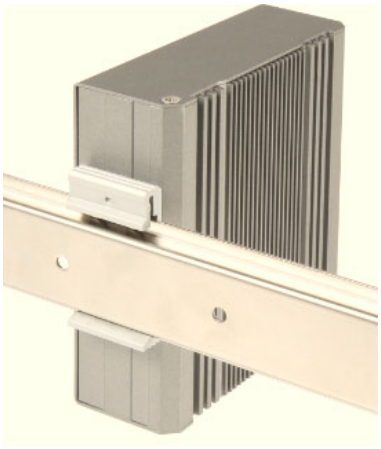
1. See the dimensions and mark the locations of the holes on the mounting surface.

2. Use the correct anchor type for the mounting surface and securely attach the KUBER-1000 series IPC on the mounting surface, like metal rack. Ensure that the attaching hardware is in the small section of the keyholes.

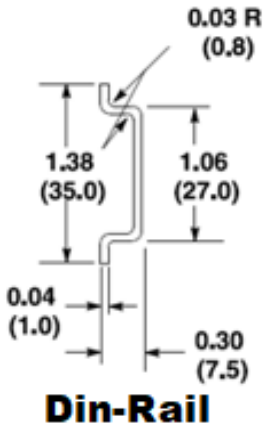
Removal

1. Remove power and disconnect cables to the IPC.
2. Loosen and remove the screws securing the IPC to the mounting surface.

4.2 DIN-Rail mount

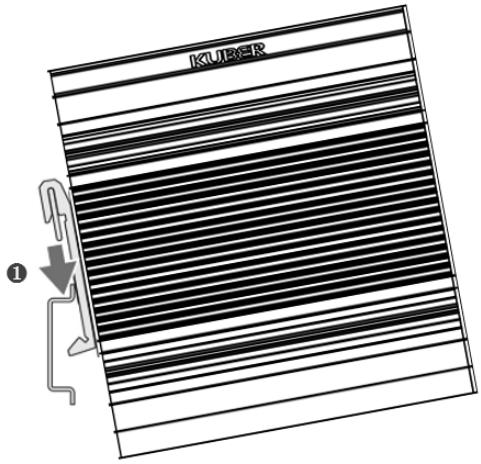


Fasten the DIN-rail bracket by screws **(M3 x 6L)** on the KUBER-1000, suitable for 35mm (W), 7.5mm(H) DIN-rail (Type Ω).

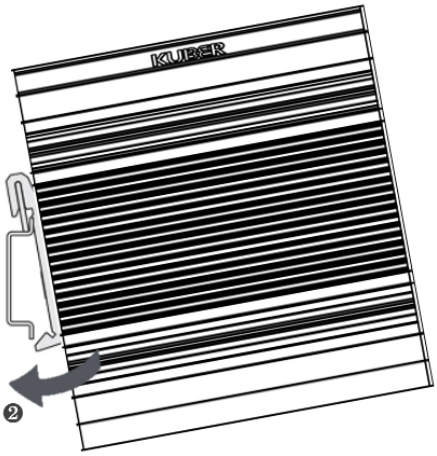


Install

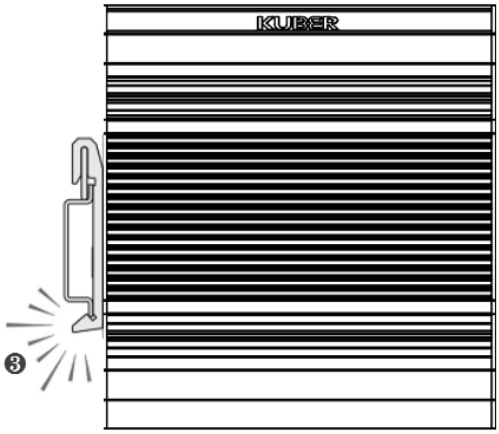
1. Angle the KUBER-1000 IPC so the top edge of the mounting plate hangs on the top edge of the DIN rail.



2. Rotate the KUBER-1000 IPC down against the lower edge of the DIN rail.

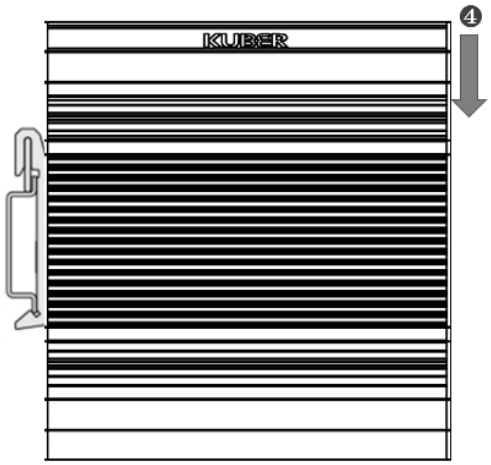


3. Press in until the latch snaps closed.

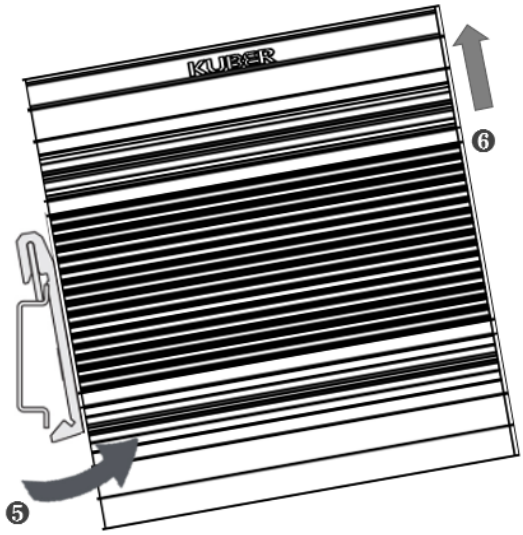


Remove

4. Press to un-secure the device on the rail.



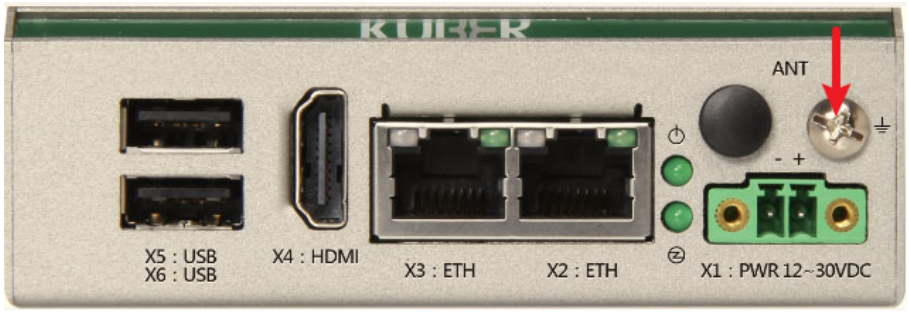
5. Release the latch and rotate the device away from the rail.



5 INITIAL SETUP

5.1 Chassis Grounding

KUBER-1000 provides good EMI protection and a stable grounding base. There is an easy-to-connect chassis grounding point to use.

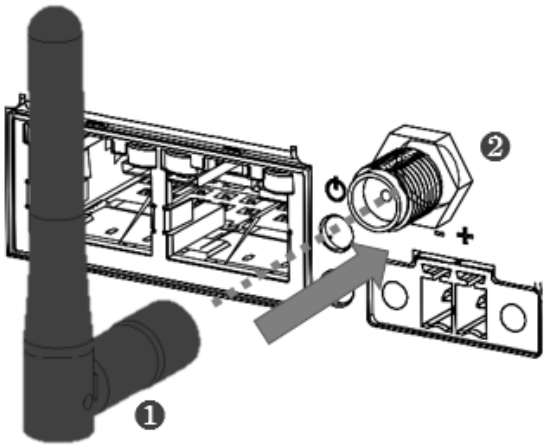


5.2 Connecting Power

You can use DC power source, rated 12-30Vdc, if need further assistance, please contact us for further information.

5.3 External Antenna installation

WiFi antenna (1) that attaches to a connector on the front of the unit (2). Since the KUBER-1000 is often installed within an enclosure, it may be advisable to install the antenna on the exterior of the enclosure with appropriate length antenna cable rather than directly to the IPC.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APPENDIX

Contact us

Make sure you always use the latest documentation. Up-to-date information of KUBER series products can be found on the website.

If there are any problems that cannot be solved using the documentation, please contact us for technical support.
info@MiTwell.com.tw

Should you have any suggestions or recommendations for improvement of the contents and layout of our manuals, please send your comments to:

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